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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/694,973 | 10/28/2003 | Raymond D. Zagranski | (49366) 58917 DIV | 4439 |

7590 04/20/2004

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| EXAMINER | |
|---|---|
| TRAN, DALENA | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3661 | |

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/694,973 | ZAGRANSKI ET AL. | |
| | Examiner | Art Unit | |
| | Dalena Tran | 3661 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *28 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *12-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### Notice to Applicant(s)

1. This application has been examined. Claims 12-21 are pending.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 12-16, and 19-20, are rejected under 35 U.S.C.103(a) as being unpatentable over Stoltman (3,777,480), in view of Hagen (3,777,479).

As per claim 12, Stoltman discloses a fuel control system for use with a gas turbine engine comprising: means for measuring a plurality of engine operating parameters (see the abstract), and means for determining an initial engine fuel demand based on the plurality of measured engine operating parameters (see column 7, lines 18-52). Stoltman does not disclose heat transferred. However, Hagen discloses means for estimating, during engine operation and based on the plurality of measured operating parameters, an amount of heat transferred between fuel combustion gases and engine metal (see column 6, line 46 to column 7, line 40), means for estimating an effective fuel flow adjustment based on the estimated amount of heat transferred between fuel combustion gases and engine metal (see column 8, lines 30-57), and means for determining a final engine fuel demand based on the initial engine fuel demand and the estimated effective fuel flow adjustment (see column 9, lines 26-50; column 10, lines 9-30; and column 12, lines 10-30). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teach of Stolman by combining estimating an amount of heat transferred, estimating an effective fuel flow adjustment, and determining a final engine fuel demand to assure safe and economical running of the engine and proper response to power demand signals.

As per claims 13-14, Stoltman discloses measuring the gas generator speed and providing a gas generator speed signal indicative of the actual rotary speed of the gas generator, and measuring engine compressor discharge pressure and providing a compressor discharge pressure signal indicative of the actual engine compressor discharge pressure (see the abstract).

As per claim 15, Stoltman does not disclose compare an actual rate of change of gas generator speed to a desired rate of change of gas generator speed. However, Hagen discloses use of fuel flow controller which iteratively compares an actual rate of change of gas generator speed which is determined from the gas generator speed signal to a maximum and minimum desired rate of change of gas generator speed (see column 4, line 31 to column 5, line 20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Stolman by combining compares an actual rate of change of gas generator speed which is determined from the gas generator speed signal to a maximum and minimum desired rate of change of gas generator speed to adjust the working line of the gas generator to each related speed.

Also, as per claim 16, Hagen discloses the maximum and minimum desired rate of change of gas generator speed is determined based on an acceleration / deceleration schedule and is a function of the gas generator speed signal (see column 5, lines 30-40).

Also, as per claims 19-20, Hagen discloses fuel metering system, fuel to the engine based on the signal of final engine fuel demand, wherein the fuel metering devices includes a variable displacement vane pump (see column 5, lines 21-28; and column 10, lines 37-61).

4. Claim 17, is rejected under 35 U.S.C.103(a) as being unpatentable over Stoltman (3,777,480), and Hagen (3,777,479) as applied to claim 12 above, and further in view of Yoshida (4,545,198).

As per claim 17, Stoltman, and Hagen do not disclose heat generated by engine fuel combustion, and heat generated by engine supply air compression. However, Yoshida discloses estimating an amount of heat generated by engine fuel combustion (see column 3, lines 16-21), estimating an amount of heat generated by engine supply air compression (see column 3, line 54 to column 4, line 2; and column 4, lines 24-42), and estimating gas generator exit gas temperature (see column 4, line 63 to column 5, line 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Stolman, and Hagen by combining heat generated by engine fuel combustion, and heat generated by engine supply air compression to develop the necessary power for driving the power turbine.

5. Claims 18, and 21, are rejected under 35 U.S.C.103(a) as being unpatentable over Stoltman (3,777,480), and Hagen (3,777,479) as applied to claim 12 above, and further in view of Sugishita et al. (6,244,039).

As per claim 18, Stoltman, and Hagen do not disclose gas generator efficiency, and a heating coefficient. However, Sugishita et al. disclose determining the effective fuel flow adjustment from the estimated heat transfer (see column 4, lines 12-32), a gas generator efficiency (see column 4, lines 39-52), and a heating coefficient of fuel (see column 5, lines

29-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Stolman, and Hagen by combining a gas generator efficiency, and a heating coefficient of fuel to meet the requirements of supplying fuel to a gas turbine.

As per claim 21, Hagen discloses estimating the effective fuel flow adjustment comprises amplifying by amplifier the effective fuel flow adjustment (see column 8, lines 7-29).

**Conclusion**

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

. Hitzelberger (3,878,676)

. Riple (4,134,257)

. Windish et al. (5,379,584)

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalena Tran whose telephone number is 703-308-8223. The examiner can normally be reached on M-F (7:30 AM-5:30 PM), off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 703-305-8233. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

/dt
April 13, 2004

TAN Q. NGUYEN
PRIMARY EXAMINER